REMARKS

This amendment is responsive to the Official Action dated December 22, 2004.

Claims 1-7 were pending in the application. Claims 1-7 were rejected. No claims were allowed.

By way of this amendment, the Applicant has amended the specification and claim 1.

Accordingly, claims 1-7 are currently pending. Favorable reconsideration of all claims is respectfully solicited in view of the Remarks below.

I. Rejections under 35 USC §102:

Claims 1, 2, 4 and 7 were rejected under 35 USC §102 as being unpatentable over the US Patent No. 3,849,678, issued to Flynn. The rejection stated that Figs. 1, 2 and 3Q illustrate a photodetector 20, 30 and capacitor 22, 35A, 42 with a ground and a continuous constant bias applied to the bias terminal.

A careful review of the relevant portion of the circuit in the cited Flynn reference clearly illustrates that the circuit and the purpose of the placement of the capacitor in the Flynn reference are entirely different and therefore, the Flynn reference cannot anticipate the claims of the present invention as amended. The capacitor in Flynn is connected directly in parallel to the photodiode. The only purpose that is served by the capacitor in the Flynn circuit is to provide a memory component to the circuit. Any voltage that is applied to the bias terminal in Flynn is transferred both through the capacitor and the diode and ultimately passed directly into the input terminal of the transistor. Should any transient voltage be introduced to the Flynn circuit, the capacitor may serve as a shunt path around the photodiode, but the voltage it then reintroduced into the circuit immediately downstream from the photodiode.

A review of Flynn (Fig. 1) clearly discloses capacitor 22, 42 that is connected in parallel with the anode 30 and cathode 20 of the photodiode 30, 20. The two terminals of the capacitor are directly connected to the two terminals of the photodiode. This is a different configuration as compared to the present application and the claims as amended. In the

arrangement disclosed in Flynn, the capacitor is connected to the photodiode in a manner that is intended to store a charge from the photodiode within the plates of the capacitor. The capacitor when connected to the two terminals of the photodiode essentially act as a memory element for the photodiode as it is periodically read in a scanning operation. The resulting circuit therefore behaves quite differently from the circuit disclosed and claimed in the present invention.

The circuit of the present invention is best seen in Fig. 1. The present invention discloses a photodiode 10 having anode 14 and cathode 16 and a capacitor 22 that is connected at one terminal to the cathode of the photodiode. It must be noted that the other terminal of the capacitor does not connect to the anode of the photodiode as was disclosed in the cited Flynn reference. Instead, the capacitor in the present invention is arranged as a shunt that entirely bypasses the photodiode and provides a path to ground. This feature of the present invention is an important feature for reasons that will be discussed in more detail below. A transimpendance amplifier (TIA) 20 is provided having an input terminal 18 that is connected to the anode 14 of the photodiode 10, and a ground terminal 24 that is connected the second terminal of the capacitor 22. A bias terminal 12 is connected to the cathode 16 with the second terminal of the capacitor 22 interposed between the bias terminal 12 and the cathode 16 of the photodiode 10.

The main purpose for connecting the capacitor as shown in Fig. 1 of the present invention it to provide a path over which transient voltage can be dissipated. In the present invention and the claims as amended it is clearly provided that transient voltage is transferred by the capacitor around the photodiode and to the ground terminal. This shunt path serves two important purposes in that the capacitor protects the photo detector from damage should transient voltage be allowed to pass through the photo detector and prevents transient voltage from entering the TIA input terminal resulting in amplification of the transient voltage surge and a cascade transfer effect down stream. This is a completely different circuit than the one found in the cited Flynn reference.

Further, in the present invention, in contrast to the disclosure in Flynn, the capacitor 22 is directly connected between the cathode 16 and the ground terminal 24. In this arrangement, and accordance with the claims of the present invention as amended, a

continuous bias is applied to the cathode 16 of the photodiode. The capacitor 22 is positioned to capacitively couple the bias terminal, which receives a constant bias from the power supply voltage Vcc, to the ground reference terminal of the TIA at the point where the un-amplified current signal generated by the photodetector is also passed to the TIA. The capacitor is thus a path to pass the constant bias AC signal from the bias terminal to ground reference terminal of the TIA therefore effectively raising the ground reference read at the TIA by the value of the applied bias signal. In operation the on-chip capacitor connected in this manner provides a shunt path that eliminates the inductance of external circuit traces between the power supply and an external capacitor while effectively factoring out the applied bias from the signal detected by the photodetector.

The claims of the present invention, as amended clearly, recite structural limitations wherein the capacitor is connected in a manner that provides a shunt from the cathode of the photo detector to the ***ground of the TIA***. This is clearly not disclosed in the cited reference where the capacitor simply is connect to the anode and the cathode of the photo detector and ultimately the ***input terminal of the TIA***

In summary, in contrast to the claims of the present application as amended, the capacitor in Flynn is connected only to the two terminals of the photodetector and ultimately to the input terminal of the transistor. In this case any transient voltage that is passed into the circuit is directly transferred into the input side of the transistor. The capacitor in Flynn is simply connected in parallel with the photodetector to act as a memory element that stores information about the level that is sensed by the photodetector. The capacitor in the present invention, as amended, serves to provide a continuous path to in order to shunt transient voltage to the ground terminal on the TIA thereby preventing the voltage spike from entering the photo detector and being passed along into the input of the TIA. Should the Flynn arrangement be utilized in the present invention, a voltage surge would be passed directly into the input of the TIA and accordingly amplified creating a cascading surge throughout the entire array. The underlying functionality is entirely different and thus the underlying structural connections are also different. Accordingly, since the structure between the cited Flynn reference and the claims of the present invention as amended are different, Flynn cannot anticipate the present invention under §102.

In view of the amendments and the remarks offered herein, favorable reconsideration of the rejected claims is respectfully solicited.

II. CONCLUSION

Accordingly, claims 1-7 are believed to be in condition for allowance and the application ready for issue.

Corresponding action is respectfully solicited.

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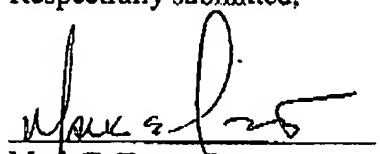
Respectfully submitted,



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